ITS Outputs in FY 2002

NTIA Publications

R.J. Achatz and R.A. Dalke, "Man-made noise power measurements at VHF and UHF frequencies," NTIA Report 02-390, Dec. 2001.

> Man-made noise generated by automotive ignition, power distribution and transmission, industrial equipment, consumer products, and lighting systems degrades the performance of radio systems. Man-made noise models, derived from measurements made in the 1970s, may be inaccurate due to changes in these technologies. For example, recent man-made noise measurements performed by ITS in the 136 to 138 MHz meteorological satellite band indicated that man-made noise power in residential areas is lower than predictions by these models. However, these same measurements indicated that man-made noise in business areas has not changed. UHF man-made noise has not been comprehensively measured and modeled. This report describes UHF man-made noise measurements conducted in the Denver, CO metropolitan area in 1999. Measurement data is analyzed and results are compared to other measurements and models. These results showed that 402.5 MHz UHF noise levels in business areas were high enough to adversely affect communication system performance some of the time.

J.J. Lemmon, "Wireless link statistical bit error model," NTIA Report 02-394, Jun. 2002.

> A bit error model that enables simulations of the digital error performance of wireless communication links has been developed. The model development has been based on error sequences derived from waveform simulations of wireless link performance with various modems operating under varying propagation, noise, and interference conditions. Values of the model parameters are obtained by analyzing the distributions of the lengths of error bursts and error gaps (error-free intervals). Mathematical expressions have been derived for the means and variances of the error burst and error gap distributions of the model as functions of the model parameters. Constraining the means and variances to the values obtained from waveform simulations uniquely determines values of the model parameters corresponding to a given set of link conditions. Examples of error burst and error gap distributions obtained from waveform simulations are compared with those generated by the model for a land mobile radio system and a wireless local area network. The simulated and model distributions are quite similar; however, the model runs tens of thousands of times faster than the corresponding waveform simulations, enabling rapid determination of link performance.

J.J. Lemmon and R.A. Dalke, "Analysis of the RF threat to telecommunications switching stations and cellular base stations," NTIA Report 02-391, Feb. 2002.

> The objective of this report is to assess the vulnerability of telecommunications switching stations and cellular base stations to high power electromagnetic radiation generated by an RF device. Analyses, measurements, and simulations of indoor propagation and the penetration of electromagnetic fields into structures indicate that typical buildings provide little, if any, protection for telecommunications switching stations from high power electromagnetic fields. The front end electronics of cellular base stations are also vulnerable to damage from high intensity RF fields via front door coupling through the receive antennas. Tools to provide estimates of power densities inside of structures and the received power levels in cellular base stations are developed in this report. More quantitative predictions of field strengths inside structures require detailed analyses on a case-by-case basis. The techniques to carry out such analyses are currently available and are briefly discussed.

M. Pinson and S. Wolf, "Video quality measurement user's manual," NTIA Handbook 02-01, Feb. 2002.

> The purpose of this handbook is to provide a user's manual for the video quality metric (VQM) tool. The VQM software tool performs automated batch processing of video files. Program VQM runs under the UNIX operating system and uses a control file to specify the exact video quality measurement procedures that are to be performed. All results are emailed to the user.

Program VQM compares the video sequence that has been processed by the video system under test to the original video sequence through two main steps. First, program VQM calibrates the processed video sequence to remove systematic differences between the original and processed, such as spatial and temporal shifts. Second, program VQM estimates and reports the perceived quality of the processed video using one of five video quality models. Quality estimates are reported on a scale of zero to one, where zero means that no impairment is visible and one means that the video clip has reached the maximum impairment level.

F.H. Sanders, "Measurements of pulsed co-channel interference in a 4-GHz digital Earth station receiver," NTIA Report 02-393, May 2002.

Pulsed signals in Earth station receiver spectrum bands have traditionally occurred due to unwanted emissions from adjacent-band transmitters such as radars and altimeters. Analog Earth station receivers sometimes experience interference from such emissions. The trend toward increasing use of digital receivers, coupled with a possible future increase in pulsed signals, have raised the question of the circumstances under which pulsed emissions may cause interference to such receivers. This report documents the results of measurements in which a variety of co-channel pulsed signals were injected into the radio frequency (RF) front-end of an operational, television receive-only (TVRO) digital Earth station. The results identified the susceptibility of the Earth station to pulsed interference as a function of pulse characteristics that included pulse width, pulse repetition rate (both constant and jittered), and peak amplitude. The results indicate that digital Earth station receivers may be vulnerable to interference that creates either a contiguous block of symbol errors or a long series of symbol errors. Interference with lower pulse repetition rates, pulse widths, and duty cycles may also produce effects; in those cases results show the interference amplitude may be increased by as much as 50 dB above the carrier level before significant interference occurs. Quantitative interference thresholds are provided for the performance of electromagnetic compatibility analyses between pulsed interference sources and digital Earth station receivers. Examples of such analyses are provided.

S. Voran, "Estimation of system gain and bias using noisy observations with known noise power ratio," NTIA Report 02-395, Sep. 2002.

The identification of linear systems from input and output observations is an important and well-studied topic. When both the input and output observations are noisy, the resulting problem is sometimes called the "errors in variables" problem. Existing work on this problem deals with the identification of multivariate systems and thus results in algorithms that are necessarily somewhat complex and often involve iteration. In this report we treat an important special case of the problem: estimation of a system bias and a system gain from noisy observations of system input and output. In addition, we invoke an input-output noise power ration constraint. This constraint can also be interpreted as a parameter that moves the problem in a continuous fashion between two limiting cases, each of which is a conventional least-squares problem. We do not model the input signal, and we place minimal restrictions on the input and output observation noises. We develop five different low-complexity closed-form solutions to the problem. The final two are the most satisfying and we explore these further through simulations. Our original motivation for working on this problem came from the need to calibrate objective and subjective estimates of perceived video or speech quality. We expect that our solutions may also find applications in remote sensing, active noise reduction, echo cancellation, channel estimation, and channel equalization.

J. Wepman, "Software defined radio comes of age," NTIA Spectrum News, vol.3, issue 1, Fall 2001.

No abstract available.

S. Wolf and M. Pinson, "Video quality measurement techniques," NTIA Report 02-392, Jun. 2002.

Objective metrics for measuring digital video performance are required by Government and industry for specification of system performance requirements, comparison of competing service offerings, service level agreements, network maintenance, and optimization of the use of limited network resources such as transmission bandwidth. To be accurate, digital video quality measurements must be based on the perceived quality of the actual video being received by the

users of the digital video system rather than the measured quality of traditional video test signals (e.g., color bar). This is because the performance of digital video systems is variable and depends upon the dynamic characteristics of both the original video (e.g., spatial detail, motion) and the digital transmission system (e.g., bit rate, error rate). The goal of this report is to provide a complete description of the ITS video quality metric (VQM) algorithms and techniques. The ITS automated objective measurement algorithms provide close approximations to the overall quality impressions, or mean opinion scores, of digital video impairments that have been graded by panels of viewers.

Outside Publications

Articles in Conference Proceedings

B. Archambeault, C. Holloway, and P. McKenna, "Measurements and simulation of a semi-anechoic room using field mapping as an indication of chamber quality," in *Proc. 2002 IEEE Intl. Symposium on EMC,* Minneapolis, MN, Aug. 2002, pp. 947-951.

In this paper we discuss the use of a field mapping approach for determining chamber quality. Both measurements and simulation results are used to illustrate this approach.

R.A. Dalke, "A model for predicting RF interference due to randomly distributed UWB sources," in *Proc. 2002 Wireless Conference,* Calgary, Jul. 2002.

This paper presents a statistical model that can be used to estimate RF interference due to randomly distributed UWB sources. The essential assumption is that the devices are uniformly distributed over the geographical area surrounding the victim receiver. The model can be used to predict interference power for both terrestrial and airborne victim receivers. Interference power is calculated in terms of the average transmitted power and transmitter gain at the RF frequency of interest, the density of the transmitters, the average azimuthal receiver gain and the average propagation gain over the area surrounding the victim receiver. Example calculations employing commonly used radio propagation models are given in the paper.

J.J. Lemmon, "Wireless link statistical bit error model," in *Proc. 2002 Wireless Conference,* Calgary, Jul. 2002.

A bit error model that enables simulations of the digital error performance of wireless communication links has been developed. The model development has been based on error sequences derived from waveform simulations of wireless link performance with various modems operating under varying propagation, noise, and interference conditions. Values of the model parameters are obtained by analyzing the distributions of the lengths of error bursts and error gaps (error-free intervals). Mathematical expressions have been derived for the means and variances of the error burst and error gap distributions of the model as functions of the model parameters. Constraining the means and variances to the values obtained from waveform simulations uniquely determines values of the model parameters corresponding to a given set of link conditions. Examples of error burst and error gap distributions obtained from waveform simulations are compared with those generated by the model for a land mobile radio system and a wireless local area network. The simulated and model distributions are quite similar; however, the model runs tens of thousands of times faster than the corresponding waveform simulations, enabling rapid determination of link performance.

P. Papazian, M. Gans, Y. Lo, and R. Dalke, "Capacity measurements for a 16x16 element BLAST array over a conducting ground plane," in *Proc. 2002 International Vehicular Technology Conference,* Vancouver, British Columbia, Sep. 2002.

This paper presents channel transfer function measurements using a 16x16 "Bell Laboratories Layered Space-Time (BLAST) antenna array and a wideband measurement system. The capacity of a BLAST system is computed using the H matrix, comprised of the complex transfer functions between each transmitter and receiver element. Measurements were made over a metallic ground plane allowing for comparison with an analytical calculation of the H matrix. Measurement data were then compared to theoretical results. Using this comparison it was determined how accurately H can be measured using a wideband system and hence how accurately the capacity of the BLAST system can be predicted. It was found that the predicted capacities, based on measurements using the 16x16 system, were within 5% of the theoretical calculations.

E. Quincy, "Victim receiver response to ultrawideband signals," in *Proc. MILCOM 2001,* Washington, D.C., Oct. 2001.

A class of time-dithered ultrawideband (UWB) systems is modeled and simulated from an analytic description of the system. These simulated time waveforms and Fourier spectra results are analyzed to show the effect of a receiver's intermediate frequency (IF) bandwidth (BW) on peak and average power. The peak and average power curves provide the basis for establishing a normalized bandwidth correction factor (BWCF) curve and equation. The BWCF is used to estimate peak power over a range of BWs from average power measurements made in a 1 MHz BW. Peak and average power are computed and compared over BWs from 0.3 MHz to 100 MHz for both pre and post detection. The 50% dithered case is also compared to a non-dithered periodic system which exhibited constant power curves as a function of IF BW below the pulse repetition rate (PRR) of 10 MHz. All of the curves increased linearly in power with BW on log-log plots. Peak power increased more rapidly than average power above the PRR for all cases.

C. Redding & C. Taylor, "Priority access service in cellular and PCS networks," in *Proc. MILCOM 2001,* Washington, D.C., Oct. 2001.

Wireless telephony can greatly assist National Security and Emergency Preparedness (NS/EP) personnel in providing emergency communications. With the widespread availability of wireless telephony, a cost effective means of communication is readily available to NS/EP users. However, due to the heavy traffic demand placed upon existing or surviving systems in the aftermath of a disaster, severe network congestion will result in high call blocking to NS/EP users when their services are needed the most. This need has resulted in the wireless intelligent network (WIN) implementation of a priority access service (PAS) development effort. The WIN implementation of PAS provides a means for NS/EP users to obtain priority access on the next available radio channel when network congestion is encountered.

T. Riley, "Modeling of licensed PCS self-interference," in *Proc. MILCOM 2001,* Washington, D.C., Oct. 2001.

Self-interference in Personal Communications Services (PCS) systems is a real and acknowledged problem in both urban and rural areas. If left unresolved, it can impact the quality of service and system capacity. Self-interference is of particular interest to the commercial PCS industry, as more systems are being developed and implemented in already saturated areas. Since commercial PCS services are being considered for use in national security/emergency preparedness (NS/EP) situations, self-interference is becoming a concern of government and military agencies. A model of self-interference in PCS systems, which is applicable to other cellular, wireless technologies, has been developed by the Institute for Telecommunication Sciences (ITS). The developed methodology was applied to two existing PCS technologies: PCS 1900 (a narrowband time division multiple access (TDMA) system based on Global System for Mobile (GSM)), and IS-95-based code division multiple access; application to the remaining second-generation, as well as proposed second-and-a-half- and third-generation technologies, is currently under way. The system-specific models are used to produce output noise and interference waveforms suitable for implementation in a real-time hardware channel simulator, or as a component of higher-level software simulations and models. Example outputs are given for simulations of both technologies, with corresponding statistical analyses of the noise and interference waveform properties. The models are particularly well-suited for independent PCS system evaluation by other Federal agencies, system manufacturers, and service providers.

T. Rusyn, "Co-channel interference modeling of the ANSI/TIA/EIA-95B code division multiple access cellular system," in *Proc. 2002 IEEE Intl. Symp. on EMC,* Minneapolis, MN, Aug. 2002.

Spectral efficiency is an essential component of existing and new technologies in Personal Communications Services (PCS). The growing demand for PCS has resulted in an increasingly crowded spectrum. Code division multiple access is one of the best methods for efficient use of the radio spectrum. Code division is used in some second generation PCS systems and is used or proposed for all third generation PCS systems. The capacity of code division cellular systems is limited primarily by interference caused by co-channel interferers and other

channel interferers. This paper introduces an interference model of the ANSI/TIA/EIA-95-B cellular system which can be used to study the effects of co-channel interference and presents results of four preliminary simulation scenarios run using the output of the model.

R. Stafford and C. Behm, "Wireless network throughput measurements," in *Proc. MILCOM 2001,* Washington, D.C., Oct. 2001.

In the current technological environment, real-time access to the Internet is becoming as important as access to a desktop computer was a decade ago. As cellular and PCS phones become more ubiquitous, the availability of mobile voice communications leads to a natural desire for mobile Internet access. This report details throughput studies performed on five different wireless data access technologies. These include one purely cellular technology, cellular digital packet data, which is carried on AMPS channels, and two PCS technologies, IS-95 and GSM. In addition a wireless mobile computing device (PDA) is examined, as well as a proprietary microcellular system.

All five technologies were tested in stationary modes and the cellular/PCS based systems were also tested in a mobile configuration at highway speeds. This study involved the use of the FTP service to investigate throughput at a user level as well as a study of packet by packet transfers. Measurements of a line modem are also given for comparison.

Journal Articles

M.G. Cotton, E.F. Kuester, and C.L. Holloway, "An investigation into the geometric optics approximation for indoor scenarios with a discussion on pseudolateral waves," *Radio Science,* vol. 37, no. 4, pp. 1-1 – 1-22, Jul.-Aug. 2002.

In this study we investigated the geometric optics (GO) approximation to the fields of an infinitesimal electric dipole above a half plane for geometries typical of wireless indoor communications. This inspection was motivated by efforts to establish a ray trace model to characterize indoor radio propagation channels. Eight canonical geometries were examined to isolate near-surface and near-field effects that are not accounted for in the GO approximation. Common building materials and physical

dimensions (i.e., antenna separation and height) as small as 1 cm were investigated for frequencies up to 8 GHz. Theoretical fields were calculated via numerical evaluation of Sommerfeld integrals and compared to corresponding GO approximations. As expected, near-field and near-surface (e.g., surface wave) mechanisms which invalidate GO were observed. Close to the surface, an interesting interference pattern in the frequency domain was identified. Mathematical manipulation showed that this so-called "pseudolateral wave" phenomenon was caused by adjacent fields in the two media propagating at different speeds. Next, we transformed the results to the time domain and used delay spread as a metric to quantify GO error. We also show that the pseudolateral wave manifests itself in the time domain as an additional pulse that arrives at a delay associated with the speed of a wave traveling in the lossy media.

C.L. Holloway, P.M. McKenna, R.A. Dalke, R.A. Perala, and C.L. Devor, Jr., "Time-domain modeling, characterization, and measurements of anechoic and semi-anechoic electromagnetic test chambers," *IEEE Trans. on EMC,* v. 44, no. 1, pp. 102-118, Feb. 2002.

We present time-domain techniques for modeling, characterizing, and measuring anechoic and semi-anechoic chambers used for emission and immunity testing of digital devices. The finite difference time-domain (FDTD) approach is used to model and characterize these chambers. In the FDTD model presented here, we discuss methods used to eliminate the need to spatially resolve the fine detail of the absorbing structures; present a differential-operator approach for incorporating both frequency-dependent permittivity and permeability into the time domain; and discuss the effects of gaps and holes in ferrite-tile absorbers on both absorber and chamber performance. Comparisons of the FDTD chamber model with measured data for different chamber sizes are presented. Finally, we discuss and illustrate how time-domain techniques can be used to characterize chambers, predict performance, and diagnose problems with both absorbers and chambers. With time-domain and frequency-domain techniques, we show how the performance of chambers can be significantly altered with only small changes in the type of absorbing structure used, and we illustrate how undesirable modal field distributions can occur inside a chamber when a nonoptimal absorber is used.

J.J. Lemmon, "Wideband model of HF atmospheric radio noise," *Radio Science,* vol. 36, no. 6, pp. 1385-1391, Nov.-Dec. 2001.

A model of the waveform generated by high-frequency atmospheric radio noise is presented. Cumulative probability distributions of the noise envelope are derived and shown to be in good agreement with a large database collected from a wide range of noise environments. The model includes correlations in the waveforms that simulate the burst structure of measured atmospheric noise. The bandwidth dependence of the voltage deviation parameter, which parameterizes the impulsiveness of the noise, shows behavior that is qualitatively similar to a limited amount of measured data.

P. Wilson, P. Papazian, M. Cotton, and Y. Lo, "A comparison of 1920-MHz mobile channel diversity gain using horizontal and vertical arrays," *IEEE Trans. on Communications,* vol. 49, no. 12, pp. 2068-2070, Dec. 2001.

Diversity gain for a 1920-MHz suburban mobile channel was measured for various array orientations (horizontal and vertical), combining techniques, and bandwidths (19.6 kHz to 10.0 MHz). While horizontal array diversity gain was larger than for the vertical array, vertical array gain was still significant for narrower bandwidths.

Unpublished Presentations

N. DeMinco, "Modeling antennas on automotive vehicles at VHF and lower frequencies," presented at IEEE Antennas and Propagation Society meeting, San Antonio, TX, Jun. 20, 2002.

E. Haakinson, "Emerging technology solutions," presented at the NTIA/PSWN Current and Emerging Solutions to Public Safety Communications Interoperability Summit, Jun. 2002, Washington DC.

J.R. Hoffman and M. Cotton, "Measurements to determine potential interference to GPS receivers from ultrawideband transmission systems," presented at the International Symposium on Advanced Radio Technologies (ISART), Boulder, CO, Mar. 2002.

J. Lemmon, "Vulnerability of telecommunications infrastructure to high power RF fields," presented at the 2001 Department of Energy Wireless Working Group, Las Vegas, NV, Nov. 27-29, 2001.

R. Matheson, "Spectrum management aspects of the wireless Internet," tutorial presented at NLANR/Internet2 Joint Techs Workshop, Boulder, CO, Jul. 28, 2002.

P. McKenna, "A comparison of radio propagation predictions and measurements at VHF and UHF using univariate and multivariate normal statistics," presented at ISART, Boulder, CO, Mar. 2002.

F.H. Sanders, "Bandwidth-limited measurements of ultrawideband device emissions," presented at ISART, Boulder, CO, Mar. 2002.

R. Stafford, "Wireless network discovery," presented at ISART, Boulder, CO, Mar. 2002.

S. Voran, "Quality assessment of digitally coded speech," presented to University of Wyoming Electrical Engineering Graduate Seminar, Laramie, WY, Apr. 26, 2002.

S. Voran, "The channel-optimized multiple-description scalar quantizer," presented to University of Wyoming Electrical Engineering Graduate Seminar, Laramie, WY, Apr. 26, 2002.

S. Voran, "Objective estimation of speech quality in the context of the IS-102.BABB-A vocoder mean opinion score conformance test," presented to TIA TR-8.4, Westminster, Colorado, Jun. 11, 2002.

J. Wepman, "An overview of SDR and enabling technologies," presented at ISART, Boulder, CO, Mar. 2002.

S. Wolf and S. Voran, "Advances in objective measurement of user-perceived video and speech quality," presented to NLANR/Internet2 Joint Techs Workshop, Boulder, Colorado, Jul. 29, 2002.

Conferences Sponsored by ITS

NLANR/Internet2 Joint Techs Workshop, July 28-August 1, 2002, co-sponsored by NIST, NOAA, NTIA/ITS, and NCAR. Workshop participants included more than 250 researchers from academia, industry, and government. Internet2 is developing and deploying advanced network applications and technologies for research and higher education, accelerating the creation of tomorrow's Internet.

2002 International Symposium on Advanced Radio Technologies, March 4-6, 2002. The focus of this year's symposium was on state-of-the-art and future trends in radio technology, spectrum regulation, policy, and business. The keynote address was given by Michael Gallagher, Deputy Assistant Secretary for Communications and Information, U.S. Department of Commerce.

Standards Leadership Roles

David J. Atkinson, Technical Coordinator for the development of a Justice and Public Safety XML Data Element Dictionary, through the XML subcommittee of the Global Justice Information Network's Infrastructure/Standards Working Group.

Eldon J. Haakinson, National Chair of the U.S. contingent of ITU-R Study Group 3 (Radiowave Propagation).

Paul M. McKenna, Chair of ITU-R Task Group 3/2 on Broadcast and Land Mobile Point-to-Area Propagation Predictions; Chair of Drafting Groups 3J6 and 3M-3B.

William J. Pomper, Chair of APCO/NASTD/FED Project 25 Encryption Task Group; Member of TIA/TR-8 - Mobile and Personal Private Radio Standards Committee; Technical Advisor to NCS Federal Telecommunications Standards Committee.

Timothy J. Riley, Editor for the proposed American National Standard: "Third Generation Systems and Licensed Band PCS Interference," as a member of TIA committee TR46.2 (Mobile & Personal Communications 1800 - Network Interfaces).

Neal B. Seitz, Chair of ITU-T Study Group 13 Working Party 4 (Network Performance and Resource Management); Chair of ANSI-accredited Technical Subcommittee T1A1 (Performance and Signal Processing).

Arthur Webster, Co-chair of Video Quality Experts Group (VQEG); Rapporteur for Question 21/9 (Objective and subjective methods for evaluating conversational audiovisual quality in multimedia services) in ITU-T Study Group 9 (Integrated broadband cable networks and television and sound transmission).

Representative Technical Contributions

APCO Project 25 (R. Bloomfield and others)

- "Editors' Initial Skeleton Draft (Version 01) of Planned New TSB: Project 25 ISSI Measurement Methods for Voice Services" (Nashville, TN; Aug. 8, 2002; ISSI Task Group). [ISSI.TG.(02)26]

- "Overview of Real-Time Media Transport in Packet Networks: RTP and RTCP" (Dallas, TX; Apr. 18, 2002; RTP Ad Hoc Group). [P25_RTP_180402.ppt]

Development of Project 25 radio standards

- E. Haakinson, Contributed to TIA/EIA Telecommunications Systems Bulletin TSB-102.CABB Project 25 Interoperability Test Procedures: Over-The-Air-Rekeying (OTAR), Feb. 14, 2002

- E. Haakinson, Contributed to draft version TIA/EIA Telecommunications Systems Bulletin TSB-102.CABx Project 25 Interoperability Test Procedures Voice Operation in Trunked Systems, Sep. 2, 2002.

- R. Achatz and R. Dalke, "Selection of Physical Layer for Interoperable Public Safety Wideband Radio Link," TIA TR-8.5 Wideband Data meeting on Project 25 Standards, Westminster, CO, Jun. 12, 2002.

- S. Voran, "Objective Estimation of Speech Quality in the Context of the IS-102.BABB-A Vocoder Mean Opinion Score Conformance Test," TIA TR-8.4 Vocoders meeting on Project 25 Standards, Westminster, CO, Jun. 11, 2002.

Dynamic frequency selection, ITU-R WP 8B

- F.H. Sanders and R. Sole, Technical considerations and algorithms for the implementation of dynamic frequency selection (DFS) in the presence of emissions from radiodetermination radar in the band 5250-5950 MHz, US Contrib. to ITU-R WP-8B Document 8B/218-E; Apr. 2002.

- F.H. Sanders and R.L. Hinkle, Techniques for measurement of unwanted emissions of radar systems, ITU-R WP-8B Draft New Recommendation M.1177-2; Sep. 2002.

- R. Sole, F.H. Sanders, and B.L. Bedford, Preliminary tests illustrating compatibility between maritime radionavigation radars and emissions from radiolocation radars in the band 2900-3100 MHz, US Contribution to ITU-R WP-8B, Document 8B/124-E; May 2002.

- R. Sole, F.H. Sanders, and B.L. Bedford, Test results used for determining the I/N protection criteria for compatibility studies of sharing between aeronautical radionavigation radars and the mobile service (IMT-2000) in the band 2700-2900 MHz, US Contribution to ITU-R WP-8B, Document 8B/272-E; September 2002.

Justice Standards Registry

- V. Pietrasiewicz and E. Gray, with the Global Justice Information Network, Infrastructure/Standards Working Group Process Development Subcommittee, Justice Standards Registry Guide, Apr. 2002.[1] Available at http://www.it.ojp.gov/jsr/public/index.jsp

- E. Gray, T. D'Alembert, and H. McEwan, "The Justice Standards Registry — A Tutorial," Aug. 2002.[2]

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1. This Guide identifies-the design objectives and functionality of the Justice Standards Registry for Information Sharing. The Registry is a collection or repository of information about IT and communications standards (and-in some cases-the standards themselves) that have been assembled and cataloged as part of the U.S. Department of Justice interoperability effort to enable information sharing among practitioners in the Justice and Public Safety communities.

2. This PowerPoint presentation describes the Justice Standards Registry and its uses. It provides preliminary instructions to assist in data entry into the Registry and examination of information contained within the Registry.

Reliability/Availability of IP-based Networks and Services

- A. Nguyen and A. Webster, Draft Technical Report "Roadmap for Standards in Support of Emergency Telecommunications Service (ETS)," T1A1.2/2002-004R4, Jul. 2002.

- A. Webster and A. Nguyen, T1S1 Document entitled "Proposed Architecture for Emergency Telecommunications Service (ETS)," T1A1.2/2002-044, Jul. 2002.

ITU-T Study Group 9

- A. Webster, Delayed Contribution 53 United States of America, Requirements for an Emergency Telecommunications Service (ETS) related to IPCablecom Networks, Q10/9, Q13/9

- A. Webster, Delayed Contribution 27 United States of America, Emergency telecommunications service proposal, Q10/9, Q13/9

Telecommunications Terminology

- E. Gray, PowerPoint Presentation to the FTSC (Federal Telecommunications Standards Committee) Apr. 2002, "FTR Proposal: Recommend adoption and use of *Telecom Glossary 2000* (ANS T1.523-2001) in lieu of FED-STD-1037C."

TIA TR-41.4 IP Telephony Infrastructure and Internetworking Group

- R. Stafford, "NS/EP Priority Support in IP Telephony," Vancouver, BC, Canada, TR41.4/02-02-14.

- R. Stafford, "NS/EP Usage Scenarios in IP Telephony," Arlington, VA, TR41.4/02-05-21.

- R. Stafford, "IP Telephony and Emergency Telecommunications Service," Westminster, CO, TR41.4/02-08-027.

Video Quality

- A. Webster, "Communication to the USA T1A1 Committee on their documentation on video quality metrics from ITU-T Study Group 9," T1A1.1/2002-002, Jan. 2002

- A. Webster, Report from VQEG, to ITU-R WP6Q September 02, Contribution to ITU-R WP6Q sent as Rapporteur Q21/9

ITU-T Study Group 9

- A. Webster, Delayed Contribution 55 United States of America, Suite of Five Technical Reports Describing Methods of Objective Video Quality Metrics   Q21/9, Q4/9

- A. Webster, Delayed Contribution 54 United States of America, Draft new Recommendation - Methodological Framework for Specifying Accuracy and Cross-Calibration of Video Quality Metrics (J.vqm)   Q21/9, Q4/9

- A. Webster, Delayed Contribution 28 United States of America, Methodological framework for specifying accuracy and cross-calibration of video quality metrics   Q21/9, Q4/9

- A. Webster, Report from VQEG to ITU-T SG9 June 02 Contribution to ITU-T SG9 sent as Rapporteur Q21/9